EXHIBIT 5

Expert Witness Report

Prepared By:
Gerald S. Nielsen
Ocean Ridge Maritime Consulting LLC

Prepared For:
Rutledge Young
Duffy & Young, LLC

Regarding:
No. 2:21-CV-965

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF SOUTH CAROLINA
CHARLESTON DIVISION IN ADMIRALTY

TIFFANY N. PROVENCE, Plaintiff,
vs.
UNITED STATES OF AMERICA, et al., Defendant

8408 King Arthurs Ct. Montgomery Texas 77316
Gerry@OceanRidgeMaritime.com 1-832-233-8563

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Assignment and Opinion Summary

Gerald S. Nielsen, owner of Ocean Ridge Maritime Consulting LLC, has been retained by the Law Firm of Duffy & Young, LLC to provide expert opinions regarding the case brought against the United States of America, Crowley Maritime Corporation, Crowley Government Services, Inc., Detyens Shipyards, Inc. and HiTrack Staffing, Inc. d/b/a HiTrak Staffing, Inc. by Tiffany N. Provence. According to the court documents this is civil action number 2:21-CV-965RMG in the United States District Court for the District of South Carolina, Charleston Division in Admiralty.

Opinions contained within this report are the author's own, and were developed after reviewing documents, materials, and testimony, conducting independent research, and applying the author's expert knowledge, education, and training.

This case concerns an incident involving Mr. Juan Antonio Villalobos-Hernandez on 3 April 2019 while he was working on board the vessel USNS *1st LT Jack Lummus.* On the date of the incident the USNS *1st LT Jack Lummus* was undergoing work at Detyens Shipyards, Inc. located in North Charleston, South Carolina.

The USNS *1st LT Lummus* is a ship in the United States Maritime Prepositioning Force designed to "provide equipment to sustain a Marine Corps Air Ground Task Force for up to 30 days" and "discharges cargo in port or at sea using organic lighterage," according to the MSC website. The USNS *1st LT Lummus* is 673.2' in length, has a beam (width) of 105.5', and is designed to be operated by a civilian crew of 30 mariners.

The USNS *1st LT Lummus* is equipped with six lifeboats, each lifeboat is equipped with a davit that secures the lifeboat in a raised position when not in use and facilitates lowering of the lifeboat when needed. Each lifeboat davit consists of two davit arms, one forward and one aft. During normal operations, the davit arms are held in the raised position by wire ropes known as "falls" or "fall wires". The davit arms are not connected and can move independently of each other.

The lifeboats are located aft on the main deck of the vessel near the accommodation or living quarters, with three on the port (left) and three on the starboard (right) side. As is typical in the maritime industry, the lifeboats are numbered starting from the bow (front) of the vessel with

odd numbered lifeboats (1, 3, 5) on the port side and even numbered lifeboats on the starboard side (2, 4, 6). The incident involving Mr. Villalobos-Hernandez occurred while he was performing repair work on the #6 Lifeboat davit, specifically the aft davit arm.

It is the author's expert opinion that both Detyens Shipyards, Inc. and Crowley Government Services Inc. failed to provide and maintain a reasonably safe workspace for Mr. Villalobos-Hernandez on the USNS *1st LT Jack Lummus* on 3 April 2019. Specifically:

1. Crowley's contract specifications did not adequately detail proper methods for securing lifeboat davit arms on the USNS *1st LT Jack Lummus* and Detyens Shipyards, Inc. did not utilize safer customary securing methods to secure lifeboat davit arms for shipyard service.
2. The methods used to secure the lifeboat davit arms on the USNS *1st LT Jack Lummus* were not in compliance with manufacturer's instructions, OSHA standards, or good rigging practice and created a hazard that led to the injury and death of Mr. Villalobos-Hernandez.
3. Oversight and inspection of work areas on the USNS *1st LT Jack Lummus* by Crowley Government Services Inc., Detyens Shipyards, Inc., and HiTrack Staffing, Inc., leading up to 3 April 2019 were inadequate and not in compliance with contractual requirements or industry standards.
4. Safety procedures and systems at Detyens Shipyards, Inc. were inadequate, in violation of applicable regulations and internal guidelines, improperly implemented, and/or not followed.

It is the author's understanding that discovery related to this case is ongoing and additional information may become available after the issuance of this report. Should additional information become available and provided, the author may supplement or amend this report.

Author's Qualifications

Mr. Nielsen began his career in the Maritime and Offshore Industries in 1980 and has been involved in incident and accident investigations for more than 20 years. Mr. Nielsen earned the following certifications, licenses, positions, and degrees during his career:

Bachelor of Science – Marine Engineering Systems – USMMA

USCG License – Chief Engineer of (Limited Oceans) of Motor Vessels of any Horsepower

USCG License – Chief Engineer of Uninspected Motor Vessels of any Horsepower

USCG License – First Assistant Engineer of Motor Vessels of any Horsepower

USCG License – Third Assistance Engineer of Steam Vessels of any Horsepower

Classification Society Marine Surveyor

Certified International Safety Management (ISM) Code Auditor

Certified International Standards Organization (ISO) 9000 Auditor

Cruise Line Designated Person Ashore (DPA)

Cruise Line Maritime Audit Director

Cruise Line Safety and Environmental Management Director

Classification Society Executive

Maritime Consultant and Project Manager

Certified Project Management Professional (PMP)

Graduate work toward M.A. Legal Studies – University of Illinois Springfield – expected graduation 2023

Methodology

Mr. Nielsen is an experienced Auditor and Marine Surveyor with certifications, training, and coursework in the areas of: Quality System Auditing; Internal Auditing; ISM Code Implementation and Auditing; Root Cause Analysis; Marine Surveying; and Project Management. This formal training, combined with more than 35 years of industry experience in both the field and office, equips Mr. Nielsen with the knowledge, skills, and experience necessary to systematically review incidents and provide opinions based on the unique events pertaining to each.

The methodology Mr. Nielsen follows provides a consistent means of identifying contributing factors, root causes, and corrective actions based on a review of case-specific facts and knowledge of applicable regulations and good maritime industry practices. Mr. Nielsen undertakes the following high-level steps to ensure a thorough and consistent review:

- Gather and review available information
- Determine the sequence of events
- Identify and analyze contributing factors
- Identify and analyze root causes
- Identify corrective actions (both implemented and missed)

Document Review and Research

The author used documentation from several sources to prepare this report, including documentation provided by Duffy & Young, LLC, his personal library (physical and digital), and materials in the public domain. Documents that Duffy & Young, LLC provided for the author to review are listed in Attachment 3 of this report.

Other documentation and sources used by the author in the research and preparation of this report include:

- American Bureau of Shipping (ABS)
    - Guidance Notes for the Investigation of Marine Incidents (2014)
- TapRoot® Root Cause Analysis
- Rigging Handbook (Klinke, 4th Edition)
- International Maritime Organization Safety of Life at Sea (IMO SOLAS, consolidated)
- International Association of Classification Societies (IACS)
    - Surveyor Glossary
- Occupational Safety and Health Administration (OSHA) website (www.OSHA.gov)
- Military Sealift Command (MSC) website (www.msc.usff.navy.mil)
- United States Coast Guard (USCG) website (www.USCG.mil)
- Crowley Government Services, Inc. website (www.crowley.com/solutions/maritime)
- Detyens Shipyards, Inc. website (www.detyens.com)
- Palfinger Marine website (www.palfingermarine.com/en)
- Crosby Group website (www.the crosbygroup.com)

Incident Summary

The facts pertaining to this incident are contained in documentation reviewed by the author, including incident and investigation reports, photos, procedures, e-mails, legal filings, and deposition testimony from Detyens Shipyards, Inc. employees. The following is a brief factual summary highlighting pertinent details, contractual responsibilities of the various parties, and the timeline of relevant events that inform these opinions.

This case concerns an incident involving Mr. Juan Antonio Villalobos-Hernandez on 3 April 2019 while he was working on board the vessel USNS *1st LT Jack Lummus* (hereafter referred to as the USNS *Lummus*), a vessel undergoing repairs at Detyens Shipyards, Inc. (hereafter referred to as DSI) in North Charleston, South Carolina. Mr. Juan Antonio Villalobos-Hernandez is also referred to as Mr. Jose Pena on various documents reviewed by the author, including personnel files and the DSI Accident/Incident report. The DSI Accident/Incident[1] report also states that the "*deceased was not believed to be Jose De Jesus Pena, DOB 05/05/1990, but was suspected to may be Juan Antonio Villalobos-Hernandez, DOB 09/22/1975*." For the purposes of this report the deceased person will be referred to as Mr. Villalobos-Hernandez.

Vessel Operations Contract

The USNS *Lummus* is a United States Government owned vessel in the United States Navy Military Sealift Command Fleet (hereafter referred to as MSC). MSC sub-contracts operation of a portion of their fleet to ship management companies. The USNS *Lummus* was operated under subcontract from MSC to Crowley Government Services, Inc. (hereafter referred to as CGS) on 3 April 2019. The contract between MSC and CGS was awarded on 15 July 2015 according to the *Solicitation, Offer, and Award* document provided to the author for review. This contract specifies the roles of both shoreside and shipboard personnel to be provided by CGS, including when the vessel is in the operational status of "Repair Availability" (RAV) or "shipyard status". Both of these terms refer to periods of time where the vessel is in a shipyard and undergoing planned repair work.

[1] DSI 000284

The MSC-CGS[2] contract has several sections pertaining to CGS responsibilities of manning or staffing, shipyard planning, and execution, including:

Pg. 151 – Repair Availability (RAV):

> "The ship shall be fully manned by the RAV crew…."
>
> "It is the Government's intent that the crew will reside onboard the vessel for the duration of the shipyard availability-…."

Pg. 500 – Repair Availability Manning

> "Contractor shall retain sufficient personnel during overhauls and other availabilities when the ship is in RAV status. The RAV manning shall be in accordance with Section 19 of the Technical Manual …"

Pg. 517 – Shipyard Availability

> 2.7 – "The Contractor shall procure and manage shipyard services … [and]conduct repairs as necessary. - …"
>
> 2.7.2 – Required Contractor Attendance – "At least one Contractor's port engineer shall be present for the entire duration of all shipyard availability.…"
>
> 2.7.2.3 – "… port engineers shall use to create work items, assemble shipyard work packages, and manage shipyard repair subcontract execution during ship repair availabilities."
>
> 2.7.3 – Availability Planning – details the Contractor responsibilities regarding development of a Plan of Action that includes:
>
> Work Item Index
> Draft Work Package
> Draft Work Items
>
> 2.7.3.5 – Release of Work Package – "…the Contractor shall submit the work package and RFP to repair facilities and Shipyards.…"
>
> 2.7.4.1 – Crew Retention During Availabilities – "In order to …monitor repairs and alterations… the Contractor shall retain sufficient personnel during overhauls… when the ship is in RAV status."

[2] Solicitation, Offer and Reward Contract with Award Date of 15 July 2015

2.7.4.2 through 2.7.4.4 – "Port engineer(s) shall manage execution of the work" …" and other references to work being conducted to the satisfaction of the Contractor's port engineer"

3.4 – Provides details regarding Contractor Shoreside Personnel including a Program Manager and Port Engineers who are responsible for "… Manag(ing) and negotiat(ing) … shipyard dry dock overhauls … "

3.9.7 Contract Surveillance – "… Contractor's lead port engineer is the only individual authorized to make modifications to the shipyard contract."

Shipyard Contracts

The USNS *Lummus* was undergoing work at DSI on the date of the incident. The contract for work to be performed[3] was issued by CGS (Owner) to DSI (Contractor) and executed on 5 September 2018. Various responsibilities of both CGS and DSI are detailed in this contract including the following:

Part II 1: "Owners' Representative(s)" means the Owners' Representative(s) stated in Box 12. Box 12 shows that the Owners' Representative(s) for this contract is Dennis Turnquist.

Part II 2(a)(i): *The Contractors shall perform the Works- … to the reasonable satisfaction of the Owners and Owners Representative(s). -…*

Part II 3(a)(i): *The supervision of the Works shall be carried out by the Owners' Representative(s)- … or such other person(s) as the Owners may from time to time appoint….*

Attachment A – SER 08a. – CONTRACTOR SAFETY RESPONSIBILITIES/ LIABILITIES: *The Contractor shall inspect all work areas and use its best efforts to prevent accidents, injury or damage to all employees, persons, and property in and about the Work covered by the Specifications and to the portion of the Vessel upon which the work is done. Contractor further agrees that through its foremen, supervisors, or other responsible representatives it will notify CGS at once if any condition is or creates an*

[3] DSI 000008 – 000020

unsafe, dangerous, or improper place to work, and assume the responsibility for seeing that such condition is corrected before proceeding with the Work. All equipment that presents a hazard or potential hazard to personnel shall have suitable protective devices installed.

Attachment A – Part II(a): *Duty of care: The Contractor shall exercise reasonable care and use his best efforts to prevent accidents, injury, death, and/or damage to all persons and property in and about the work done and to the Vessel, her materials, and equipment.*

Contained within the shipyard contract are work packages that provide details regarding the work to be done on the USNS *Lummus* while at DSI. The work package relevant to this incident is Item No. 0601 titled "Lifeboat Davit Repairs"[4] . This work package is dated 9 March 2018 and provides details regarding the work to be completed along with additional requirements for inspection and acceptance, including:

7.8 – "*Present davits for inspection by the vessel's Chief Mate."*

7.18 – "*Test and adjust- … to satisfaction- … of CGS Port Engineer."*

8.3 – *"Inspection and acceptance of all work shall be by the designated CGS representative."*

Section 7.9 of the Work Package states that a Palfinger service representative is to inspect the lifeboat davits and provide a condition report of findings. Palfinger is an international company that provides lifesaving products and inspection services for marine equipment such as lifeboat davits.

Palfinger conducted an initial survey of all six lifeboats and davits along with representatives from the American Bureau of Shipping (ABS), United States Coast Guard (USCG), DSI, Quality Assurance (QA), and CGS[5] on or around 4 January 2019.

Palfinger then performed a detailed inspection of the lifeboat davits on board the USNS *Lummus* and provided a service report containing results of the inspections. This report was issued

[4] Plaintiff 000075 – 000078
[5] DSI 000284

as a 6-page preliminary report[6] on 7 January 2019 and was followed by an additional 52 pages of diagrams and detailed findings[7] on 10 January 2019.

Based on the Palfinger reports, DSI generated Inspection Reports that were provided to CGS for their review and approval. CGS Representative Dennis Turnquist issued a Condition Report Response[8] on 14 January 2019 and initiated a contract change order to authorize DSI to perform the repairs specified within the Palfinger reports.

Personnel and Staffing Contracts

Shipyard work is subject to fluctuations in scale and resulting changes in manpower demand are typically met using temporary or contract workers. DSI had such a contract in place with HiTrack Staffing Inc. (hereafter referred to as HiTrak). In the contract between DSI and HiTrak dated 15 June 2016[9], HiTrak is described as "a staffing agency that provides temporary/supplied workers to host employers." The contract details responsibilities of both DSI and HiTrak including the following:

DSI Responsibilities regarding hazards and safety:

> *Provide a workplace free from serious recognized hazards and comply with standards, rules and regulations issued under the OSH Act.*
>
> *Examine workplace conditions to make sure they conform to applicable OSHA regulations/standards.*

HiTrak Responsibilities regarding hazards and safety:

> *Evaluate all worksites to which workers may be required to work, the task assignments and potential hazards to identify and eliminate potential safety and health hazards, prior to*

[6] DSI 000051 – 000056
[7] DSI 000057 – 000108
[8] DSI 000049
[9] DSI 000042 – 000047

providing temporary/supplied workers to DSI. Evaluation of host employer's worksites will identify necessary training and protections needed for each worker.

Perform inspections host employer's worksites as often as necessary to ensure implementation of DSI's safety and health obligations for temporary/supplied workers.

As documented in the above personnel and staffing contracts, DSI, and HiTrak have agreed to either "examine" or "evaluate" the workplace where the contracted personnel will be working for hazards and for compliance with OSHA regulations and standards.

Timeline of Events leading up to Date of Incident

28 December 2015 – HiTrak Staffing Safety Orientation form completed by Jose Pena[10].

31 October 2016 – Mr. Villalobos-Hernandez hired by SST for work as a welder at DSI[11].

November 2018 – The USNS *Lummus* entered DSI to begin a repair availability period originally contracted for the dates of 15 Nov 2018 to 19 January 2019[12].

19 November 2018 – All six lifeboats removed from the USNS Lummus.

XX (date unknown) November 2018 – Original lifeboat "falls", the wire ropes on which lifeboats are raised and lowered, are removed from all six lifeboat davits on the USNS Lummus. The fall wires keep the davit arms in the raised position, and the davit arms were instead temporarily held in the raised position using ½" diameter wire ropes and "saddle" clamps by DSI. This work to restrain the davit arms was not specified by Crowley's contract and should have been explicitly detailed to include 1) removing davit arms or 2) restrain davit arms using nylon slings or the welding of a physical stop.

4 January 2019 – Initial survey of lifeboats and davits.

7 – 10 January – Detailed inspection of lifeboat davits by a Palfinger representative.

[10] DSI 000004
[11] DSI 000041
[12] DSI 000010

3 April 2019 – Date of Incident

Daily Vessel Safety and Agenda Sheet[13] shows the following regarding work package 601:

> 601 - Continue the lifeboat davits and lifeboat repairs.
>
> 601.02 – Continue the steel renewals for the STBD lifeboat davit.

Job Safety Analysis (JSA) for this date[14] signed by Jose Pena included the following work description, tasks, and hazards(s):

> 0601.02 Lifeboat Davits p/s: Portside lifeboat davits are complete and working repairs on STBD side as per Palfinger reports.
>
> Task: Torch cutting, welding, grinding, drilling, JLG operations.
>
> Hazard(s): Fire smoke, burns, grinding dust, back injuries, trips and falls, noise, electrical shock, air quality, temporary pinch points and ongoing painting in the dry dock.

At 0700 the employee shift started, Mr. Villalobos-Hernandez attended the daily (JSA) meeting and reported to the USNS *Lummus*. The JSA meeting held on the morning of 3 April 2019 did not include identifications, warnings, or discussions of the hazards that injured and killed Mr. Villalobos-Hernandez.

Approximately 0900 a hot work permit was issued, and Mr. Villalobos-Hernandez began preparations for work on the aft davit arm of Lifeboat Davit #6. Each lifeboat is equipped with a davit that consists of two davit arms, one forward and one aft. These arms are not connected and can move independently of each other.

At approximately 0920, the wire rope holding the #6 lifeboat aft davit arm in the raised position parted and the davit arm rolled downward due to gravity and struck Mr. Villalobos-Hernandez, crushing him between the davit arm and other fixed equipment. The davit arm pinning Mr.

[13] DSI 001825
[14] DSI 000002 – 000003

Villalobos-Hernandez was then lifted by one of the shipyard cranes and Mr. Villalobos-Hernandez was moved to the deck of the vessel near the lifeboat davit.

At approximately 0930 the DSI Safety Manager was advised of the incident via walkie-talkie radio and DSI Safety Office personnel responded to the scene.

At approximately 0940 DSI safety office personnel were on scene of the incident and began resuscitation efforts. 911 was contacted and advised of incident.

At approximately 0950 a rescue basket was landed (by crane) on the main deck near the incident and Mr. Villalobos-Hernandez was placed in the basket and lowered to the pier.

Once lowered to the pier Mr. Villalobos-Hernandez was determined to have died by the local EMS personnel who responded to the 911 call and resuscitation efforts ended.

Based on eyewitness reports and the OSHA investigation, it is not entirely clear if Mr. Villalobos-Hernandez was welding at the time of the incident or if he was preparing to do so. His task involved grinding of metal structure on the davits to remove corrosion and then filling in the ground-out areas by welding. At the time of the incident there was no grounding clamp found nor was there any indication of recent welding on or around the davit he was working on. It was noted that Mr. Villalobos-Hernandez was wearing his welding helmet at the time of the incident, but this does not lead to the conclusion that he was welding as welding helmets have both a dark lens for welding and a clear lens for other activity pertinent to his task, such as grinding.

During the response the DSI Safety Office contacted the local OSHA office and advised them of a fatality. The OSHA report[15], issued 6 September 2019, concluded that the wire rope used to secure the davit arm in the raised position failed as a result of an electrical current passing through it where it made contact with the davit arm around a sharp corner without relief or protection.

[15] OSHA FOIA 000013 – 000024

Opinions and Analysis

Opinion #1

Crowley's contract specifications did not adequately detail proper methods for securing lifeboat davit arms on the USNS *1st LT Jack Lummus* and Detyens Shipyards, Inc. did not utilize safer customary securing methods to secure lifeboat davit arms for shipyard service.

Review of the contract in place between CGS and DSI for repairs on the USNS *Lummus* shows that there is no detail regarding how to secure the lifeboat davit arms properly and safely for necessary inspection and repair. The specific work instruction for the lifeboat davit repairs is shown as Work Item 601 in the USNS Lummus Work Item Index[16] and is titled "601: Lifeboat Davit Repairs and Falls Renewal". The detailed Work Item[17] requires the following as per section 7.0 "Statement of Work Required":

> 7.1 Remove all lifeboats from the davits and stow shoreside on Contractor furnished cradles within 24 hours of vessel arrival at Contractor's facility.
>
> 7.2 Remove and dispose of the lifeboat falls[18]

The lifeboat falls wires hold the davit arms in the raised and ready position during normal operations. To remove the lifeboat fall wires, the davit arms need to either be lowered to a resting (deployed) position or otherwise secured in the raised position. Crowley should have provided guidance for the proper and safe securing of the davit arms prior to removal of the fall wires and before any repair work is conducted on the davits. Absent this guidance, DSI utilized wire rope and then improperly installed wire rope clips to secure the lifeboat davit arms in the raised position (see opinion #2).

There are safer, customary alternative options to secure the lifeboat davit arms that should have been documented in the contract or utilized by DSI during task planning. The safest

[16] Vessel Defendants 956 – 959
[17] Vessel Defendants 967 – 970
[18] a common term for the lifeboat launching wires, also referred to as fall wires

available option would involve removing the davit arms from the davits and placing them on the deck or in a suitable workspace. Removing the davit arms from the davit eliminates the risk of the arms dropping and creates an easier working environment for the grinding, welding, and painting required on both the davits and davit arms. If removal of the davit arms was determined infeasible, a secondary means of retention should have been used to secure the davit arms and ensure a safe working environment. Alternative secondary retention options available to DSI include the use of nylon slings or the welding of a physical stop, as was done post-incident on the USNS *Lummus*.

It is the author's opinion that the absence of a contract specification for the safe restraint of the lifeboat davit arms was a direct cause of Mr. Villalobos-Hernandez's injury and death. It is further the author's opinion that DSI created a hazardous condition when it restrained the lifeboat davit arms in the manner that was chosen.

Opinion #2

The methods used to secure the lifeboat davit arms on the USNS *1st LT Jack Lummus* were not in compliance with manufacturer's instructions, OSHA standards, or good rigging practice and created a hazard that led to the injury and death of Mr. Villalobos-Hernandez.

Review of depositions and the DSI Accident/Incident report indicate to the author that DSI routinely uses wire rope and "Crosby clamps[19]" (wire rope clips) to secure lifeboat davit arms on vessels in the shipyard. Supporting documentation includes:

- DSI Accident/Incident Report #9093-01[20] dated 9 April 2019 and signed by Michael Marshall states "davit arms had been restrained with ½" cable and Crosby clamps prior to entering dock."
- In the deposition of Wayne Matayabas, the Senior Safety person in the DSI Safety Office (pg. 10) he states that the use of wire rope and Crosby clamps has been "good shop practice" since 1997 (pg. 39) and that their use is "sound shipyard practice" (pg. 63).

Safe and proper use of rigging with wire rope and wire rope clips is well-documented in manufacturer's instructions and various "rigging handbooks" that are commonly used as reference when rigging. The use of wire ropes and wire rope clips are not a primary means of rigging, as the use of prefabricated rigging slings is preferred. Prefabricated rigging slings are factory made, tested, and come with size and safe working load information permanently affixed to it as required by OSHA[21].

A review of photos[22], manufacturers data, applicable OSHA standards, and instructions on the Crosby Group and other industry websites by the author shows multiple examples of the wire rope clips not being used properly on the USNS *Lummus*. Specifically:

[19] The term "Crosby clamps" is a manufacturer-specific term that applies to wire rope clips manufactured by the Crosby Group
[20] DSI 000281 – 000285
[21] OSHA Standard 1915.112(b)(1)(i)
[22] DSI 000207 – 000223

- The author reviewed multiple pictures of secured davits on the USNS *Lummus* that show wire rope clips clamped on three wires. Wire rope clips are designed to secure to two wires, no more and no less. There is no acceptable use for wire rope clips where they are clamped on three wires.
- When a piece of wire rope has been bent 180 degrees back over itself (referred to as a "turnback" termination), the wire rope clip is then used to secure the end of the doubled-over wire onto itself, forming a loop. There are specific requirements for how wire rope clips should be oriented when attached to the wire safely in this scenario. The author reviewed multiple pictures on the USNS *Lummus* where the wire rope clips were installed in the wrong orientation in turnback terminations.
- Securing a single ½" wire rope requires the use of three properly-spaced wire rope clips in a row, per manufacturer instructions. Review of the USNS *Lummus* pictures shows that all davits were secured using only two wire rope clips, without the proper spacing required.
- When two cut ends of ½" wire rope are secured using wire rope clips, as was the case on all davits on the USNS Lummus, a total of 6 wire rope clips with proper spacing and orientation are required to have the necessary strength for securing the wire rope. The pictures reviewed of the USNS Lummus shows that all davits were secured using two wire rope clips only, without the proper orientation or spacing required.

The following description of wire rope clips is from the Crosby Group website:

Forged wire rope clips are used in many applications.

Wire rope clips are used to fix the loose end of the loop back to a wire rope. These clips generally consist of a U-shaped bolt, forged saddle, and two nuts. The two layers of wire rope are placed in the U-bolt. The saddle is fitted over the ropes on to the bolt. The nuts secure the arrangement in place. When installing the clips, the saddle portion is placed on the load-bearing or live side. It is not to be placed on the non-load-bearing or dead side of the cable. This is to protect the stress-bearing end of the rope against crushing and abuse.

The following table is from the Crosby Group website showing that 3 wire rope clips are required for ½" wire rope:

Table 1				
Clip Size (Inches)	Rope Size (Inches)	Minimum No. of Clips	Amount of Rope to Turn Back in Inches	Torque in Ft. Lbs.
1/8	1/8	2	3-1/4	4.5
3/16	3/16	2	3-3/4	7.5
1/4	1/4	2	4-3/4	15
5/16	5/16	2	5-1/4	30
3/8	3/8	2	6-1/2	45
7/16	7/16	2	7	65
1/2	1/2	3	11-1/2	65
9/16	9/16	3	12	95
5/8	5/8	3	12	95
3/4	3/4	4	18	130
7/8	7/8	4	19	225
1	1	5	26	225

The following is an excerpt from manufacturer's instructions showing the correct means of securing two overlapping wires, like the wires used on the USNS *Lummus* davit arms. As can be seen, proper use of wire rope clips would require 6 wire rope clips, properly oriented and spaced.

Figure 5. The preferred method of splicing two wire ropes together is to use interlocking turnback eyes with himbles, using the recommended number of clips on each eye (See Figure 1).

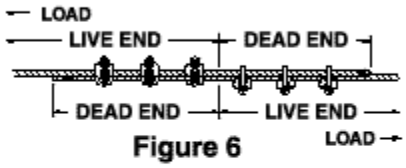

Figure 6

Figure 6. An alternate method is to use twice the number of clips as used for a turnback termination. The rope ends are placed parallel to each other, overlapping by twice the turnback amount shown in the application instructions. The minimum number of clips should be installed on each dead end (See Figure 2). Spacing, installation torque, and other instructions still apply.

In addition to improper use of wire rope clips, DSI also violated OSHA[23] by having the wire rope in direct contact with the davit corners and wrapped in such a way that resulted in sharp bends. The use of wooden blocks or other suitable protective material as a buffer between the wire rope and the davit both protects the wire rope from damage and electrically insulates the

[23] OSHA standard 1915.116(f)

wire rope from the davit arm. OSHA issued a citation and fine against DSI for the above violation as documented in their 6 September 2019 memorandum[24].

The following photo excerpt[25] from the USNS *Lummus* shows improper wire rope clip installation with two clips instead of the required six, clamping three wires (instead of the allowed maximum of two) with improper wire rope clip orientation and spacing, and where the wire rope is installed around a sharp corner bend without protection from electrical currents or damage. This rigging is in clear violation of OSHA standards 1915.112(b)(2) and 1915.116(f), manufacturer's instructions, and good rigging practice:

[24] OSHA FOIA 000013 - 000018
[25] DSI 000200

The above photo is a representative example of multiple photos showing the same non-conformities.

Based on the above information and experience in the shipyard and maritime industries, it is the author's opinion that DSI's use of wire ropes and wire rope clips to secure the lifeboat davit arms on the USNS Lummus violated good industry practice, manufacturer's instructions, and OSHA standards. Furthermore, had the USNS Lummus lifeboat davit arms been properly secured or had readily available alternative securing options been chosen (as described in Opinion #1 of this report), the hazardous condition that caused the injury and death of Mr. Villalobos-Hernandez on 3 April 2019 would have been avoided.

Opinion #3

Oversight and inspection of work areas on the USNS *1st LT Jack Lummus* by Crowley Government Services Inc., Detyens Shipyards, Inc., and HiTrack Staffing, Inc., leading up to 3 April 2019 were inadequate and not in compliance with contractual requirements or industry standards.

The contracts associated with the USNS Lummus repairs at DSI are described in this reports Incident Summary. CGS, DSI, and HiTrak had contractual obligations to provide oversight, inspect, and/or accept work being conducted at DSI on the USNS *Lummus*, specifically:

CGS, as operator of the USNS *Lummus*, a vessel owned by the United States, had a contractual responsibility (as detailed in the Incident Summary) to:

- Provide crew that resides on the vessel during shipyard periods
- Have a Port Engineer present during shipyard periods.
- Manage shipyard repair subcontract execution.
- Have sufficient personnel to monitor repairs and alterations.
- Port engineer to manage execution of the shipyard work.
- Program manager to manage shipyard dry dock overhauls.
- Supervision of the work being performed at DSI (CGS-DSI contract)

Specific to CGS, OSHA Standards state[26] that in shipyards, the "Employer (Shipyard) [is not the] only entity responsible if others have duty or responsibility placed upon them by law, regulation, or custom". It is the author's opinion that CGS's responsibility to provide a safe workplace remains when their vessel is in a shipyard and manned by CGS crew based on OSHA Standard 1915.3.

DSI, according to the terms of the shipyard contract[27], had an obligation to:

- Perform the works … to the reasonable satisfaction of the Owners [CGS] and Owners Representative(s).
- Inspect all work areas to prevent accidents, injury or damage to persons and property.

[26] OSHA Standard 1915.3
[27] DSI 000008 – 000040 BIMCO Standard Ship Repair Contract

- Notify CGS of any unsafe or dangerous conditions.
- Provide protective devices on all equipment that presents a potential hazard to personnel (including temporarily raised and restrained loads, such as a davit arm).
- Use best efforts to prevent accidents, injury, death, or damage to persons and property.
- Present work for inspection and/or acceptance by CGS representatives and/or crew.
- Provide a workplace free from serious recognized hazards.
- Examine workplace conditions to ensure compliance with OSHA Standards.

HiTrak, as provider of personnel to DSI, had a contractual obligation[28] to:

- Evaluate all worksites to which workers may be required to work.
- Identify and eliminate potential safety hazards prior to providing personnel.
- Perform worksite inspections to ensure implementation of DSI's safety obligations.
- Provide a workplace free from serious recognized hazards (SST contract).
- Examine workplace conditions for compliance with OSHA Standards (SST contract).

The author's review of provided documentation leads to the opinion that many of the above contractual obligations were not met, specifically:

There is no indication of CGS oversight of the repair work being conducted on the USNS Lummus. CGS personnel did not attend daily shipyard safety meetings and their interaction with DSI Safety personnel was not regular or formalized but happened by chance only.

CGS, as contracted operator of the USNS Lummus, should have their own Safety Management System (SMS) in place according to the International Safety Management (ISM)[29] Code (with which the Military Sealift Command complies on a voluntary basis). Ship owners and operators are required to have an SMS that, in part:

- Provides for safe practices in ship operation and a safe working environment[30].
- Ensures compliance with mandatory rules and regulations[31].

[28] DSI 000042 – 000047
[29] ISM Code 2018 Edition
[30] ISM Code 2018 Edition Section 1.2.2.1
[31] ISM Code 2018 Edition Section 1.2.3.1

- Assesses all identified risks to its ships, personnel and the environment and establish appropriate safeguards[32].
- Includes instructions and procedures to ensure safe operation … in compliance with relevant international and flag State legislation[33].
- Includes procedures for reporting, investigating, and analyzing non-conformities, accidents, and hazardous situations[34].

The above SMS requirements, along with standard industry practice of monitoring any work being done by third parties on vessel equipment, along with the specific contract, requires that CGS personnel regularly inspect worksites on the USNS *Lummus*, including the lifeboat davit repairs, to identify hazards and to ensure that work is being conducted properly and safely. In the author's opinion, CGS failed to conduct a reasonable inspection and that failure was a direct cause of Mr. Villalobos-Hernandez's injury and death.

DSI, as the shipyard contracted to perform the repair work on the USNS *Lummus*, and provider of personnel to perform the work, has their own procedures as well as applicable industry and regulatory rules and standards to comply with. Documentation reviewed by the author, including depositions from members of the DSI Safety office, lead to the opinion that DSI was not providing oversight or inspections that would ensure compliance with these requirements, specifically:

- Safety office personnel were trained and encouraged to look for "basic" issues only during their safety rounds (Marshall pg. 72, Desjardins pg. 8, Matayabas pg. 15).
- Safety office personnel provided with minimal required OSHA training by an in-house trainer (Matayabas pg. 11)
- There are several references to a "freelance" style of vessel safety inspections (Matayabas pg. 12, Desjardins pg. 19, Marshall pgs. 7, 77).
- No checklists were used during safety inspections (Marshall pg. 10, Lyles pg. 11)
- The DSI Senior Safety Manager had not stepped on board the USNS Lummus prior to 3 April 2019 (Marshall pg. 11)

[32] ISM Code 2018 Edition Section 1.2.2.2
[33] ISM Code 2018 Edition Section 1.4.2
[34] ISM Code 2018 Edition Section 9.1

It is the author's opinion that DSI did not conduct oversight or inspections of work being performed on the USNS Lummus in accordance with their contractual obligations or to good industry practice.

HiTrak has similar responsibilities to DSI in its contract regarding workplace inspections and hazard identifications. The author was not provided with any evidence that indicates that HiTrak conducted any safety inspections or walk-throughs prior to or during the period that the USNS *Lummus* was at DSI.

It is the author's opinion that oversight and inspection, required contractually, by internal standards, and by good industry practice, was not adequately provided by CGS, DSI, or HiTrak, and that this inaction allowed the hazardous conditions that caused the injury and death of Mr. Villalobos-Hernandez to go undetected and uncorrected.

Opinion #4

Safety procedures and systems at Detyens Shipyards, Inc. were inadequate, in violation of applicable regulations and internal guidelines, improperly implemented, and/or not followed.

In addition to contractual obligations discussed in Opinion 3, DSI has internal safety procedures in place that were inadequate and/or not properly implemented and/or followed.

DSI Workplace Safety and Health Manual

DSI has a Workplace Safety and Health Manual[35] that contains the following DSI Safety Philosophy:

- ***All injuries can be prevented***
- ***Management is responsible for preventing injuries***
- ***Working safely is a condition of employment***
- ***All operating exposures can be safeguarded***
- ***Training employees to work safely is essential***
- ***Prevention of personal injuries is good business***

This manual was originally issued in 2012 as revision 00 and was reviewed annually through 2020[36]. During this eight year period there were three fatality accidents at DSI[37], including the death of Mr. Villalobos-Hernandez, yet there were only two minor revisions to the Workplace Safety and Health Manual manual from 2012-2020 and no revisions following his death. Also of note, the manual does not include discussion or guidance on any of the workplace safety topics commonly discussed and employed throughout the shipyard and maritime industries in the past decade, including the following:

- Job Safety Analysis (JSA)
- Pre-Task Risk Assessments
- Tool-Box Talks
- Dropped Objects Prevention (DROPS)
- Line of Fire (LOF) or Stored Energy incidents
- Stop Work Authority (SWA) or Time-Out For Safety (TOFS)

[35] DSI 001383 – 001472
[36] DSI 001471
[37] Lyles deposition pg. 81

- Hazard Hunts

The manual does contain sections on Safety Meetings[38], Safety Committees[39], and Safety Inspections[40]. Based on documentation provided and the deposition testimony, the author has seen no indication that these internal DSI procedures were followed.

DSI's Workplace Safety and Health Manual, Section 28, titled "Accident Investigation, Reporting, and Recordkeeping", provides guidance for conducting and documenting accident investigations and explains the purpose as follows:

> *The purpose of an accident investigation program is the prevention of future accidents through the use of knowledge derived from the investigation. Additionally, the investigation will be used to prepare reports required by federal and state laws as well as the Workmen's' Compensation insurance carrier. These reports are critical in establishing and protecting management's and the supervisor's liability under the law.*

The DSI manual, in section 28, also states that the Environmental Safety Health Office (ESHO) is responsible for investigations involving a fatality, and that "*effective accident investigation identifies these root causes and recommends strategies to eliminate management system weaknesses.*"

Deposition testimony from the head of DSI's Environmental and Safety Office (EHSO) Manager Mike Marshall shows that his initial accident report[41] listed several root causes of the incident that resulted in the injury and death of Mr. Villalobos-Hernandez, including:

- Lack of Written Instructions
- Hazards Not Identified
- Inattention to Detail
- Taking an unsafe position or posture

During review of the initial report by DSI's VP of Operations Larry Reynolds, the DSI EHSO Manager Mr. Marshall was instructed to change the report[42] so that only the following root cause was noted:

[38] DSI 001448
[39] DSI 001449
[40] DSI 001450 – 001456
[41] Marshall deposition exhibit 3
[42] Marshall deposition pgs. 30 – 42

- Taking an unsafe position or posture

It is the author's opinion that these changes to the accident report, made at the instruction of DSI senior management, were made to focus blame on the injured party and deflect any blame away from DSI or their procedures.

Shipyard Orientation

HiTrak, which according to OSHA [43] only provides staff to DSI, uses a Shipyard Orientation Package that consists of 94 pages of slides covering a variety of topics[44] . This document goes into detail on certain topics (such as confined spaces entry and fire hazards) but, similar to the DSI Safety and Health Manual, contains no mention of common safety practices and procedures such as those mentioned above, nor does it contain any references to wire rope, wire rope clips, Crosby clamps, lifeboat davits, or securing equipment.

It is the author's opinion that HiTrak and DSI's manuals are inadequate and deficient in regards to common safety practices in the shipyard and maritime industries and in communicating "lessons learned" from previous incidents, and that these deficiencies are a direct cause of the unsafe environment that led to the injury and death of Mr. Villalobos-Hernandez.

Job Safety Analysis

Another common safety tool used in the shipyard and maritime industries is a Job Safety Analysis (JSA) or Job Hazard Analysis (JHA). A JSA/JHA is a documented tool that is defined by OSHA as follows:

> *A **JSA/JHA** is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level.*[45]

[43] OSHA FOIA 000014
[44] DSI 001193-001286
[45] OSHA Publication 3071 – Job Hazard Analysis (pg. 1)

DSI utilizes JSA's on a daily basis based on information reviewed, however the JSA provided from 3 April 2019[46] is very generic in nature and not task specific. JSAs need to be specific to the task at hand in order to be effective, with the steps required to complete the task, identification of hazards that can be reasonably anticipated, and corrective actions taken to mitigate the risks resulting from those hazards. The JSA used by Mr. Villalobos-Hernandez for the work being performed on 3 April 2019 was not task specific, did not outline the steps required to complete the task, did not identify hazards specific to the task, and did not provide corrective actions that were relevant to the task.

It is the author's opinion that inadequate and improperly implemented safety systems at DSI allowed a hazardous condition to go undected and uncorrected, and that if the available tools and systems were properly followed, the hazardous condition that caused the injury and death of Mr. Villalobos-Hernandez's death would have been identified and corrected.

[46] DSI 000485-000486

Conclusions

Based on the documents, materials, and testimony reviewed thus far, along with review of pertinent information, standards, practices, and regulations, as well as my education, experience, and training, it is the author's opinion that Detyens Shipyards, Inc., and Crowley Government Services Inc. failed to provide and maintain a safe workspace on the USNS *Lummus* by creating, and then not detecting or correcting, a hazardous condition that led to the injury and death of Mr. Villalobos-Hernandez. Specifically:

1. Crowley's contract specifications did not adequately detail proper methods for securing lifeboat davit arms on the USNS *1st LT Jack Lummus* and Detyens Shipyards, Inc. did not utilize safer customary securing methods to secure lifeboat davit arms for shipyard service.
2. The methods used to secure the lifeboat davit arms on the USNS *1st LT Jack Lummus* were not in compliance with manufacturer's instructions, OSHA standards, or good rigging practice and created a hazard that led to the injury and death of Mr. Villalobos-Hernandez.
3. Oversight and inspection of work areas on the USNS *1st LT Jack Lummus* by Crowley Government Services Inc., Detyens Shipyards, Inc., and HiTrack Staffing, Inc., leading up to 3 April 2019 were inadequate and not in compliance with contractual requirements or industry standards.
4. Safety procedures and systems at Detyens Shipyards, Inc. were inadequate, in violation of applicable regulations and internal guidelines, improperly implemented, and/or not followed.

These conditions were a direct cause of the injury and death of Mr. Villalobos-Hernandez.

14 February 2022

Gerald Nielsen – Owner
Ocean Ridge Maritime Consulting LLC

Date